HYGIENE.

62. *Hospital Atmosphere.*—Dr. Evory Kennedy, in his address to the Midwifery Section of the British Association, made the following remarks:—

"I hold that the congregation of a number of patients in common chambers generates what we term a hospital atmosphere; that this hospital atmosphere is, or more properly becomes, a poison; that, by a persistence in the causes of its production (with which we shall presently deal), it undergoes a process of what may be termed cumulation, pervading every part of an inclosed building, until it eventually arrives at a stage which we may term saturation, when the whole hospital is charged with a poison capable of seizing upon those who are susceptible to its influence, or who are in what we term a state of receptivity.

"Now, from this it will be seen that, by crowding patients in a hospital, we are actually exposing them to a new disease generated by the very means we adopt to cure them of the disease under which they chance to labour. But, unfortunately, the new disease is generally one most fatal in its character, as few there be who survive it.

"The characters or phases of the hospital disease vary under different circumstances of the victims susceptible to it. Thus one may be attacked with blood-poisoning or empyema; another with erysipelas; a third with hospital gangrene; and a fourth with metria or puerperal fever. The laws which regulate the habits of this family of zymotic disease are perhaps best arrived at by a study of the last named poison, as, in its occurrence in our great lying-in hospitals, where it principally commits its ravages, it is less exposed to disturbing influences, and consequently pursues its own natural course free from interruptions and complications.

"Out of a hundred and eleven years, for which the great Dublin Lying-in Hospital has been established, it has been haunted by puerperal fever ninety-three years. For twelve years it has been comparatively, and only for eight years has it been totally, free from this fell disease. The deaths of those admitted for the last years amount to 1 in 33. Let us remember that in three small cottage hospitals in Ireland, in which accurate tables have been kept (Killkenny, Newry, and Waterford), we find that the mortality has been 1 in 282. On the comparison of these two proportions, the conclusion is inevitable that eight out of nine patients have died in the Dublin Lying-in Hospital who would not, in all likelihood, if they had taken refuge in the cottage hospitals, which were comparatively free from the hospital miasm or poison that prevailed or lurked in the great unhealthy hospital.

"A fatal error, into which we are prone to fall, is the confounding epidemic and endemic disease; and the amount of loss of life that has occurred from this error I believe to be incalculable. This will be easily appreciated when we state that what, in strictness, we should call true epidemic diseases, are unavoidable; whilst the latter, or endemic diseases, are, with rare exceptions, preventable and perfectly within our control. True, they may be convertible; but this makes the distinction the more important, in order to prevent their extension or fixture.

"The contagious nature of hospital miasm is now beyond question; as also that of most of those modifications of hospital zymotocene with which we are familiar, especially metria and erysipelas.

"Having satisfied ourselves that a poison is generated by the mere crowding of numbers of patients into a common atmosphere, and also that this poison spreads by contagion, the next principle or law we require to establish is that this poison is cumulative, or developing in its quantity, commencing with a single poisonous emanation, and increasing in its quantity until the atmosphere, walls, floors, and furniture become imbued or charged with it. Unfortunately, as yet we are unable to detect this miasm or poison and display it by its sentient properties; but of its existence we cannot have the slightest doubt, from its effects, from its laws, from analogy, and especially the spread of diseases by inoculation and contact.

"But why should the hospital wards ever be free from hospital miasm and these fatal results, if all this be true? This is a question to be answered by the law upon which we now dwell—cumulation. The ordinary epidemic disappears; having, as we say, worn itself out. This it does in hospital as out of it. Precautions are taken; patients zymotically affected are separated; ablution and ventilation are carried out; admissions are refused; the wards are emptied; and the hospital becomes healthy. Weeks, months, and longer, pass over before the poison again shows itself. The cumulative process, however, is in steady operation; and at an uncertain period the poison again shows itself, and snatches up its victims. The same measures of precaution are taken to banish it, and with the same results. But it does not rest here, as has been abundantly proved by the history of our great hospitals. When the cumulation has gone on repeating itself again and again, a further stage, or that which I shall denominate the stage of complete saturation, is arrived at, and then the hospital becomes the fixed *habitat* of the poison.

"The death of the consumptive costermonger is not to be placed in the category of the victims to hospitalism. It has its analogue in the dog slain in the Grotto del Cane for the instruction of his slayers, by holding him so close to the surface of the deadly cavern that he can only inhale mephitic gas. Nor, indeed, is it only in St. Pancras that we have this going on. Have we not our No. 11 wards and grottoes in nightly operation for the benefit of the upper ten thousand in the West-end *réunions*. Witness the pallid and poisoned state to which our belles are reduced, at the end of the season, from breathing mephitic and animal-poisoned air for several hours nightly, with their lungs at nearly as great a disadvantage as the costermonger's, by tight lacing and waltzing. The Black Hole of Calcutta and the middle passage rendered our fathers familiar with the more immediate effects produced from a number of people breathing and rebreathing the same atmosphere; and its more gradual effect in the production of jail-fever, grappled with by Howard in his mission of mercy, has reached us as a matter of history. We were in hopes that the labours of Boswell Reid and Arnott had exposed the defects of ventilation and directed a remedy. But the enormities occasionally cropping up from neglect in this respect show that much remains to be done. Dr. Farr, in a paper lately read at the Leeds Conference, pointed out the want that exists of an authoritative organization charged with the ministry of public health. As it is, what is every man's business is left undone. When will our legislators waken up from their piecemeal attempts at sanitary improvement, and grapple with this great subject as it demands, and as the well-being of the community requires?

"The fact is that, when the poison is generated, crowding or the co-habitation of patients in a state of receptivity secures its spread. A process of cumulation of the contagium or poisonous element occurs; and when this arrives at the stage of saturation, outbursts of erysipelas, phagedæna, gangrene, pyæmia, and metria occur; the patients are attacked wholesale; and the diseases become, as we before stated, endemic or fixed, and continue to haunt the hospitals, be they surgical or obstetrical.

"Now that the blot has been hit, it requires no great philosophy to meet the difficulty. Simply cease to crowd such patients into common buildings under the same roof. All the advantages of an asylum can be afforded whilst segregation is secured, and facilities for medical instruction preserved to the schools. The substitution of cottage-hospitals for these great hotbeds of contagion should be insisted upon in all future arrangements for housing cases liable to endemic poisons. The term epidemic should be applied in its true meaning. These large surgical and maternity hospitals, in which metria, erysipelas, and pyæmia have committed such havoc, should be either applied to purposes compatible with the safety to human life, or so altered in their construction as to isolate each ward from the common atmosphere now pervading the whole hospital. This may be very simply and inexpensively accomplished by opening separate entrances into each ward direct from the open air. In the existing hospitals, the communications with the common hall should be built up, and the same system carried out in the upper stories by opening the ward-doors on flying galleries. The lifts and stairs should be placed outside the building; the existing halls and passages being still retained for the staff, and affording an approach to the respective stories, but no covered approach or communication of any kind allowed to remain between these and the wards. By these simple expedients, and the limiting the number of beds to three in each ward, it is probable a large saving of human life would result, and hospitalism become, like jail-fever and smallpox, a thing of the past. Pity the founders of the great hospitals so recently erected had not applied our dear-bought experience in their magnificent constructions. The sooner these altered arrangements are made in such great palatial institutions as St. Thomas's and the Leeds hospitals, as well as the maternities and our other great charities subject to erysipelas, pyæmia, and phagedæna, the sooner will the insidious approaches and fell ravages of our common enemy, hospitalism, be subdued.

"Stow, in his *Survey*, mentions, in speaking of the King's Bench Prison, that the great mortality that occurred there in the six years preceding 1579 was produced through a certain contagion called "The Sickness of the House." Those learned physicians who uphold the crowding in large hospitals, and imagine they can meet the difficulty by disinfectants, I would refer to the simple experience of that benefactor of our species, John Howard, as conveyed in his preface a century since. He says: 'I guarded myself by smelling to vinegar while I was in those places. This I did constantly and carefully when I began; but, by degrees, I became less attentive to these precautions, and have long since entirely omitted them.' John Howard discovered and carried out the best means, on true scientific principles, of disposing, once and for ever, of 'the sickness of the house.' If the obstinate hospital crowders would take example by him, and meet as he did, crowding, the cause of 'the diseases of the house,' and, as he did, remove them, they would speedily produce an equally satisfactory result, and, like Howard, give up their futile attempt to meet the case of dealing with emergency by 'smelling to vinegar.'"—*Brit. Med. Journ.*, August 10, 1872.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

63. *Carbon as an Antidote to Phosphorus.*—MM. **Eulenberg** and **Vohl** have recently shown that phosphorus may be absorbed by charcoal. They, therefore, propose to employ the latter coal as an antidote to the former. They recommend that animal charcoal be given, with this view, in pills, because in that form, charcoal requires less fluid in order to be swallowed, and further because animal charcoal made into a pilular mass with mucilage or gum tragacanth is preserved many years. Experiments made upon animals have resulted very favourably.—*Revue de Thérapeutique, Med. Chir.*, April 15, 1872.

64. *Is Strychnia the Antidote to Chloral?*—M. **Oré**, Professor of Physiology at the Bordeaux School of Medicine, answers in the negative, or at least he denies that Liebreich had the right to state that strychnia was the antidote to chloral, as an inference from the experiments which he (Liebreich) had performed. M. Oré has been going over Liebreich's experiments, and has not attained the same results. It will be remembered that Liebreich's experiments went to show: 1. An hypodermic injection of two grammes (half a drachm) is deadly to rabbits. 2. An injection of one milligramme and a half of strychnia is equally deadly. 3. If an hypodermic injection of one milligramme and a half of strychnia be made into a rabbit, even when the effects produced by a subcutaneous injection of two grammes of chloral have begun to show themselves, these effects are rapidly arrested and the animal is restored to life. On the other hand, it dies if no strychnia is administered.

M. Oré's counter-experiments, eight in number, have been conducted on rabbits of various sizes. The results are: If two grammes of chloral occasion death in certain cases they do not in all; and the same may be said of one and a half milligrammes of strychnia. M. Oré concludes that strychnia may be the anti-